In view of the need for a suitable method for routine analysis of Pioglitazone, Rosiglitazone, Metformin, Glimepiride and Repaglinide in formulations, attempts are being made to develop simple, precise and accurate analytical methods for the estimation of these drugs and extend it for their determination in formulation. As by Literature survey it was found that only few methods are available for the estimation of these drugs. Here these four combinations were selected for simultaneous HPLC method development:

- ROS and MET
- ROS and GLP
- PIO and MET
- PIO and GLP

However no method could be found for simultaneous estimation of these drugs, and also no method is available for such estimation in the pharmacopoeia. In view of the need for a suitable method for routine analysis of said above drugs combinations in formulations, attempts are being made to develop simple, precise and accurate analytical methods for simultaneous estimation of drugs and extend it for their determination in formulation.

However no HPTLC method could be found for estimation of these drugs, In view of the need for suitable HPTLC methods for PIO, ROS & REP. However no HPTLC could be found for simultaneous estimation of PIO & GLP, In view of the need for suitable HPTLC method. The methods were validated for parameters like accuracy, linearity, precision, specificity, ruggedness, robustness, and system suitability. These methods provide means to separate the individual components of a mixture and simultaneously characterize and quantify the components.

**In summary, the primary objective of proposed work is to:**

- The objective of this work was to develop a new, simple, economic, rapid, precise and accurate HPLC and HPTLC method for quantitative analysis of PIO, ROS, MET, GLP and REP drugs respectively.
- Seven simple RP-HPLC methods were developed and validated for the quantitative estimation of PIO, ROS, MET, GLP and REP from bulk and its formulation. Develop
new, simple, sensitive, accurate, and economical analytical methods for the estimation of these drugs.

- An attempt was made to develop four HPLC methods for simultaneous estimation of ROS and MET, ROS and GLP, PIO and MET and PIO and GLP for method development and validation.
- Apply the proposed methods for analysis of these drugs in their combined dosage form.
- An attempt was made to develop HPLC methods for PIO and ROS and REP respectively.
- An attempt was made to develop four simple HPTLC methods were developed and validated for the quantitative estimation of PIO, ROS, REP and simultaneous estimation of PIO and GLP from bulk and its formulation.
- Validate the proposed methods in accordance with ICH parameters like linearity, accuracy, precision, specificity, limit of detection, limit of quantification, range, solution stability and system suitability. Apply the proposed methods for analysis of these drugs in their dosage form.